

Estimating the extent of Antarctic summer sea ice during the Heroic Age of Exploration: Supplementary Material

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Term	Ice	Voyages
In pack/pack ice	y	All
Heavy pack ice	y	5-7,9-12
Loose pack ice	y	4-6,9-11
Broken pack	y	10,11
Drift ice	y	10
Heavy drift ice	y	10
Stream ice	y	4,5
Pancake ice	y	5,7,9
Ice floes/Floe ice	y	4,6,8,10-12
Small ice	y	10
Young ice	d	4,7,9
Brash ice	n	4,7,10
Very loose pack ice	n	12
Very loose drift ice	n	8
Open water	n	All

- 1 Belgica 1897-99
- 2 Southern Cross 1898-1900
- 3 Gauss 1901-03
- 4 Discovery 1901-04
- 5 Scotia 1902-04
- 6 Terra Nova 1903-04
- 7 Nimrod 1907-09
- 8 Pourquoi-Pas? IV 1908-10
- 9 Terra Nova 1910-13
- 10 Aurora 1911-14
- 11 Aurora 1914-16
- 12 Endurance 1914-17

Table S1: Terms present in the logbooks along with an indicator as to whether they were classed as ice or not and the voyages which used each term.

Table S2: Relevant data from logbook entries that we have classified as the sea ice edge.

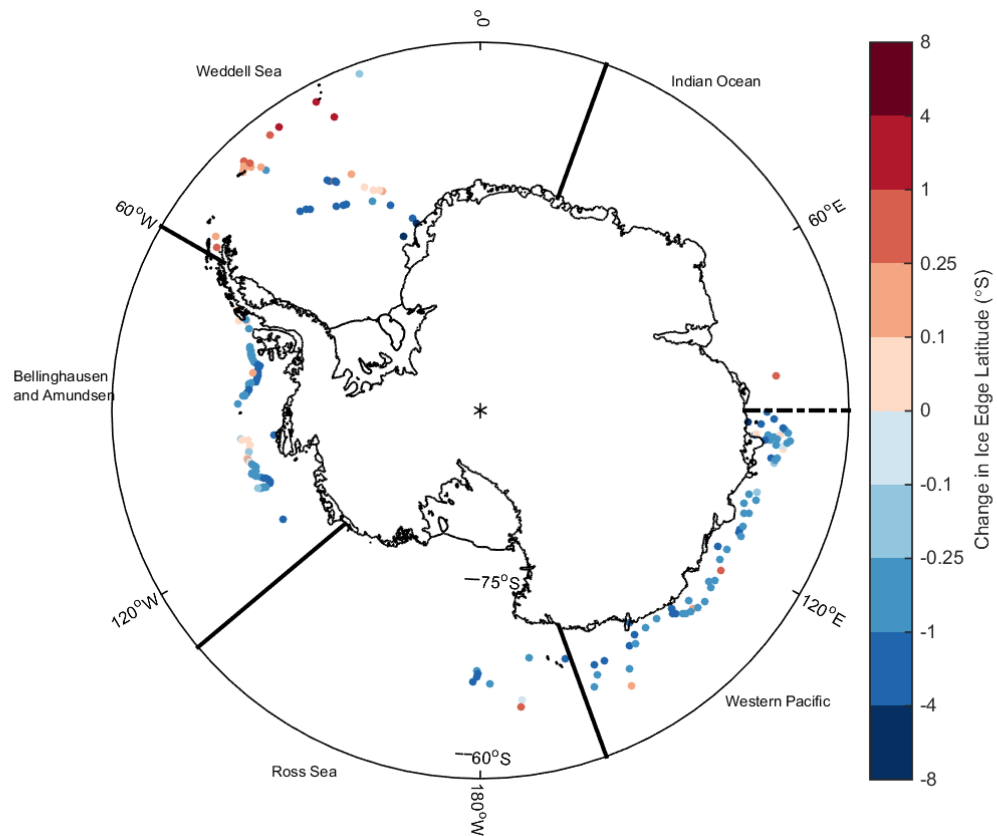


Figure S1: Anomaly between ship-observed ice edge and the 1989-2014 maximum PM-Bootstrap algorithm derived ice edge position for the appropriate calendar day. Anomalies are plotted at logbook position.

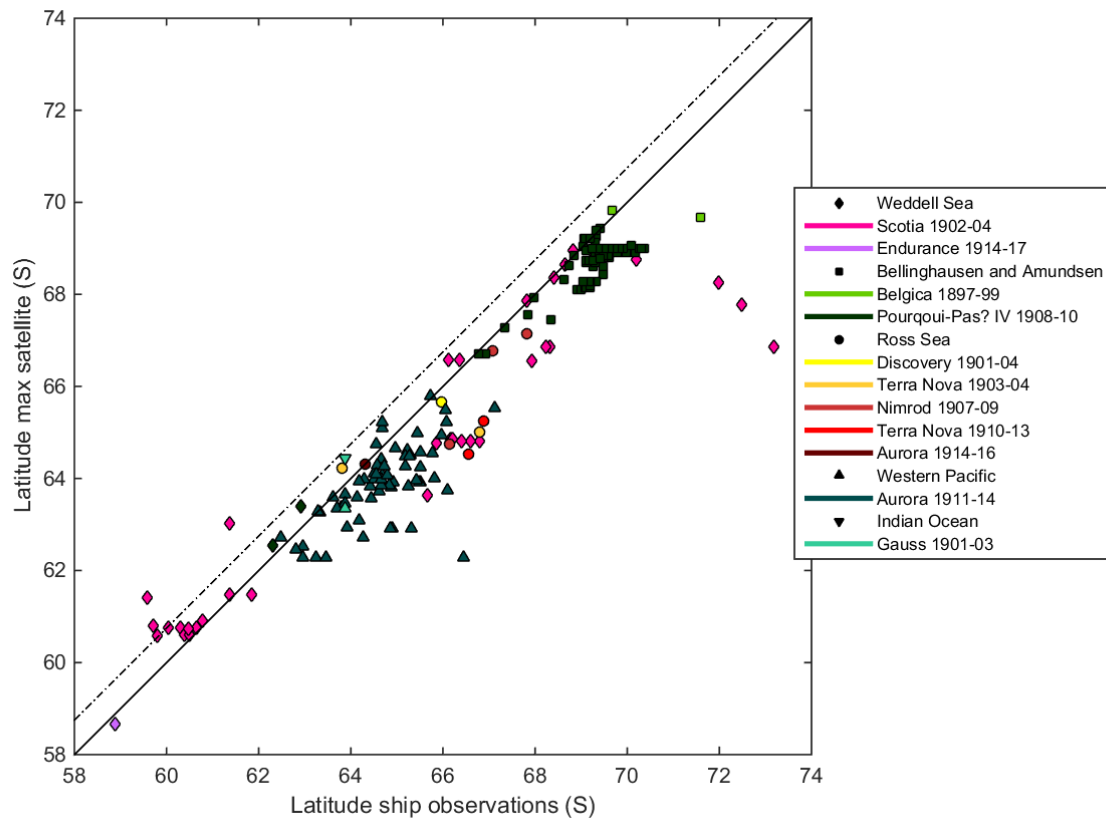


Figure S2: Comparison of ship-observed and maximum satellite-derived ice edge latitude, including a one-to-one line, which indicates no change in position. The dashed line provides an estimate of the southward offset one would expect when comparing the satellite-derived ice edge to in-situ ship observations, as calculated by Worby and Comiso (2004).

Video S1: Animation of the route of the 1902-1903 voyage of the *Scotia* expedition against the daily mean, minimum and maximum satellite-derived ice edges. For each frame, the route of the ship for that particular day and the preceding day is shown, with a colour indicator showing the sections of the expedition when the ship was travelling in open water as blue and when the ship was travelling through the ice as white.

Video S2: Animation of the route of the 1903-1904 voyage of the *Scotia* expedition against the daily mean, minimum and maximum satellite-derived ice edges. For each frame, the route of the ship for that particular day and the preceding day is shown, with a colour indicator showing the sections of the expedition when the ship was travelling in open water as blue and when the ship was travelling through the ice as white.

Video S3: Animation of the route of the *Endurance* expedition of 1914-1917 against the daily mean, minimum and maximum satellite-derived ice edges. For each frame, the route of the ship for that particular day and the preceding day is shown, with a colour indicator showing the sections of the expedition when the ship was travelling in open water as blue and when the ship was travelling through the ice as white.

Video S4: Animation of the route of the 1907-1908 voyage of the *Nimrod* expedition against the daily mean, minimum and maximum satellite-derived ice edges. For each frame, the route of the ship for that particular day and the preceding day is shown, with a colour indicator showing the sections of the

expedition when the ship was travelling in open water as blue and when the ship was travelling through the ice as white.

Video S5: Animation of the route of the 1908-1909 voyage of the *Nimrod* expedition against the daily mean, minimum and maximum satellite-derived ice edges. For each frame, the route of the ship for that particular day and the preceding day is shown, with a colour indicator showing the sections of the expedition when the ship was travelling in open water as blue and when the ship was travelling through the ice as white.

Video S6: Animation of the route of the 1910-1911 voyage of the *Terra Nova* expedition against the daily mean, minimum and maximum satellite-derived ice edges. For each frame, the route of the ship for that particular day and the preceding day is shown, with a colour indicator showing the sections of the expedition when the ship was travelling in open water as blue and when the ship was travelling through the ice as white.

Video S7: Animation of the route of the 1911-1912 voyage of the *Terra Nova* expedition against the daily mean, minimum and maximum satellite-derived ice edges. For each frame, the route of the ship for that particular day and the preceding day is shown, with a colour indicator showing the sections of the expedition when the ship was travelling in open water as blue and when the ship was travelling through the ice as white.

Video S8: Animation of the route of the 1912-1913 voyage of the *Terra Nova* expedition against the daily mean, minimum and maximum satellite-derived ice edges. For each frame, the route of the ship for that particular day and the preceding day is shown, with a colour indicator showing the sections of the expedition when the ship was travelling in open water as blue and when the ship was travelling through the ice as white.

Video S9: Animation of the route of the *Aurora* expedition of 1914-1916 against the daily mean, minimum and maximum satellite-derived ice edges. For each frame, the route of the ship for that particular day and the preceding day is shown, with a colour indicator showing the sections of the expedition when the ship was travelling in open water as blue and when the ship was travelling through the ice as white.